



# U.S. Space Industry 'Deep Dive' Assessment

## Challenges Facing the U.S. Space Industry

### Preliminary Findings from the Second Waypoint

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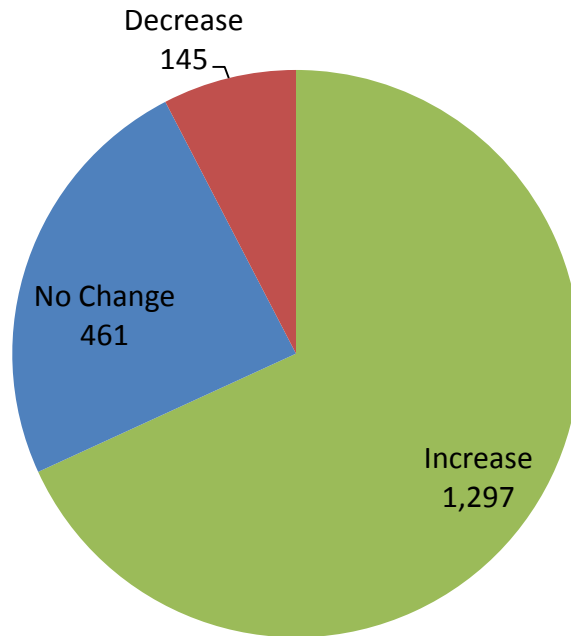
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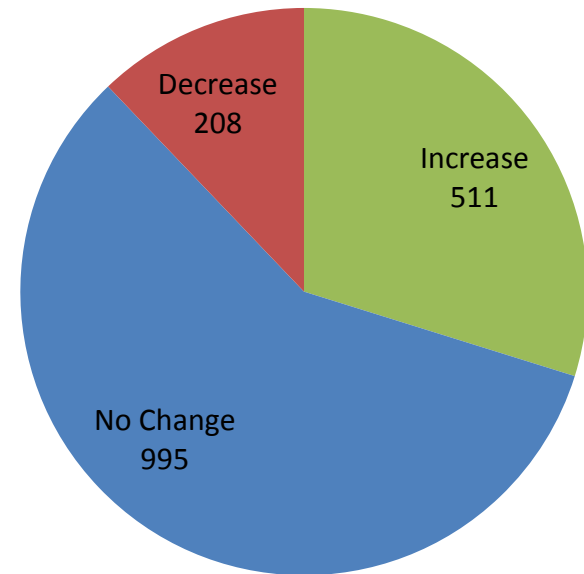
- This presentation explores the challenges facing members of the U.S. Space Industry through an in-depth look into sales and employment trends and the issues that respondents have identified as obstacles to their long-term viability.
- Topics covered include:
  - Comparisons of past performance with expectations for the future
  - Differences in trends of respondents who support government agencies
  - Specific obstacles facing different groups of respondents
  - Best and worst performing business lines
  - Sales trends by state

# U.S. Total v. Space Sales Forecast

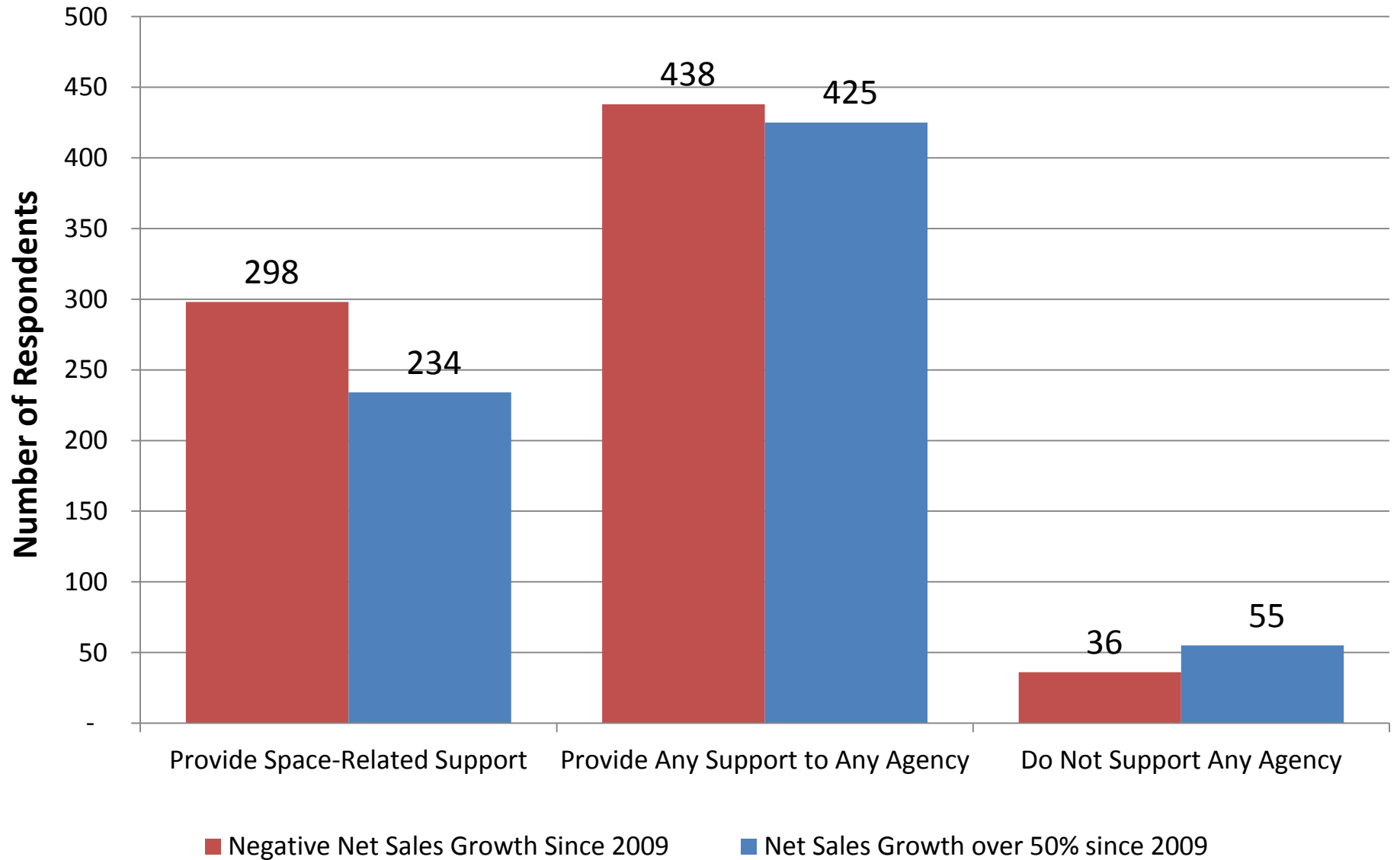
**Total U.S. Sales Forecast,  
2013-2017:  
All Respondents**



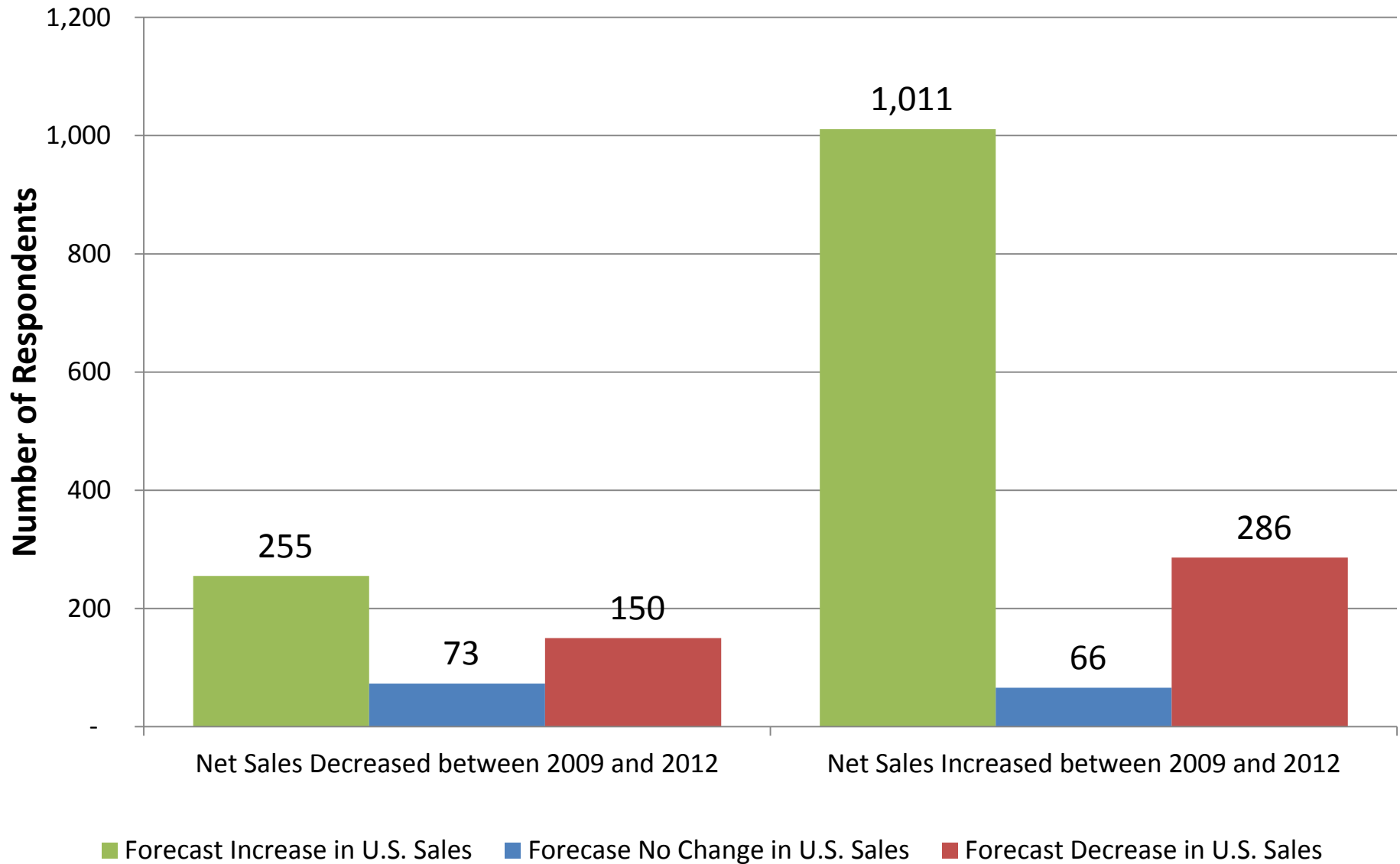
**U.S. Space-Related Sales  
Forecast, 2013-2017:  
All Respondents**



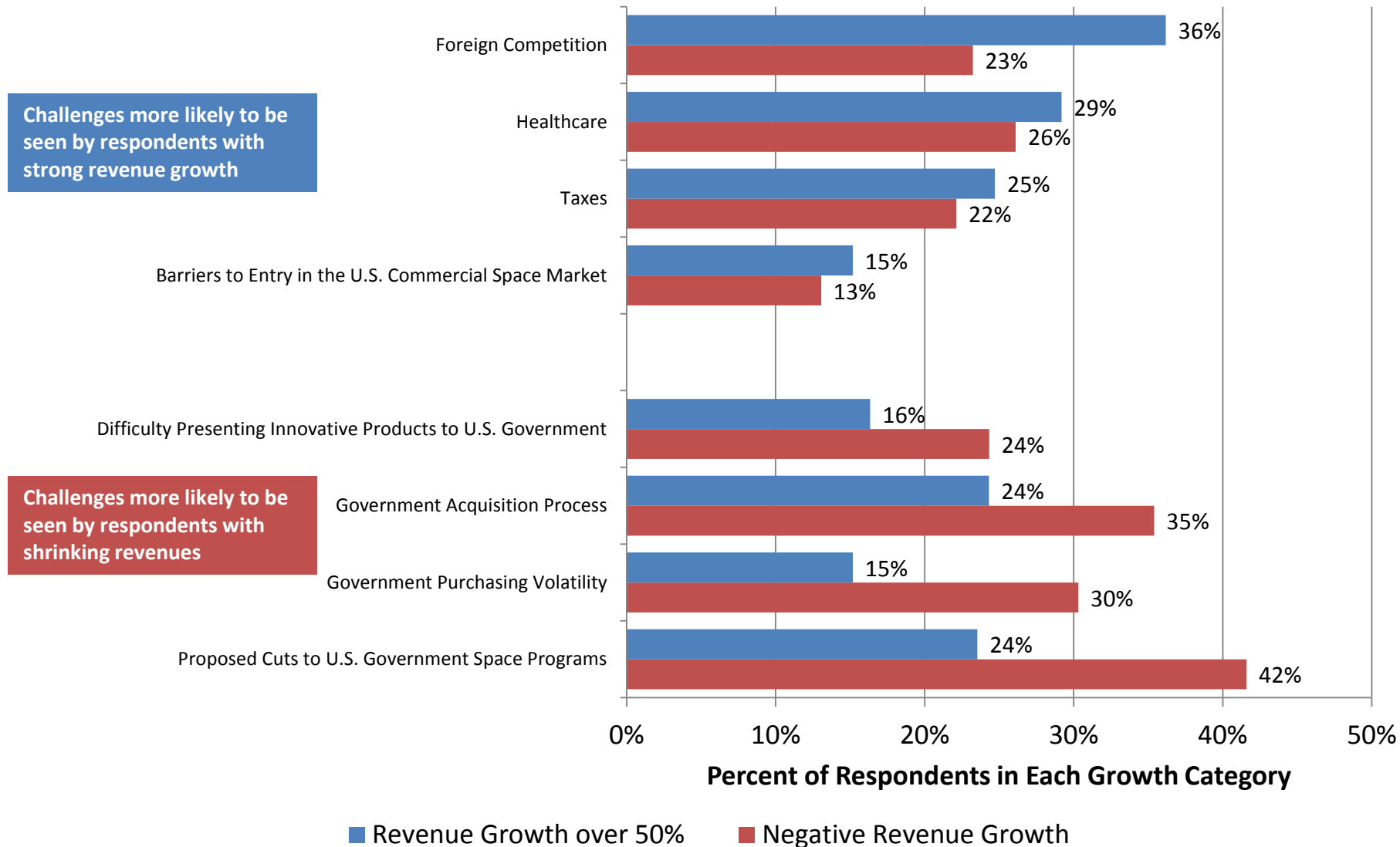
# Net Sales Growth by Type of Agency Support



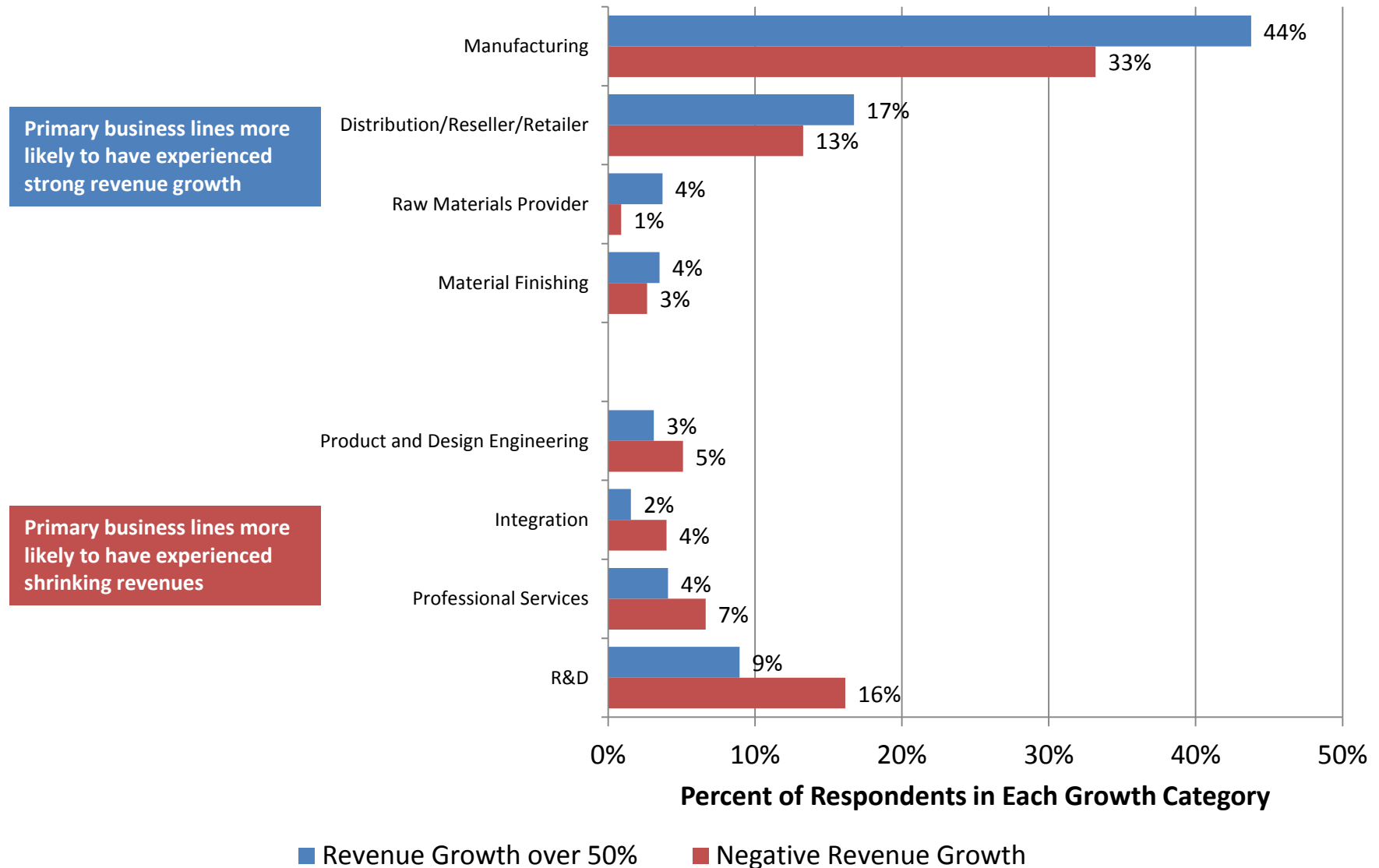
## Sales Forecast Compared to Past Sales Performance



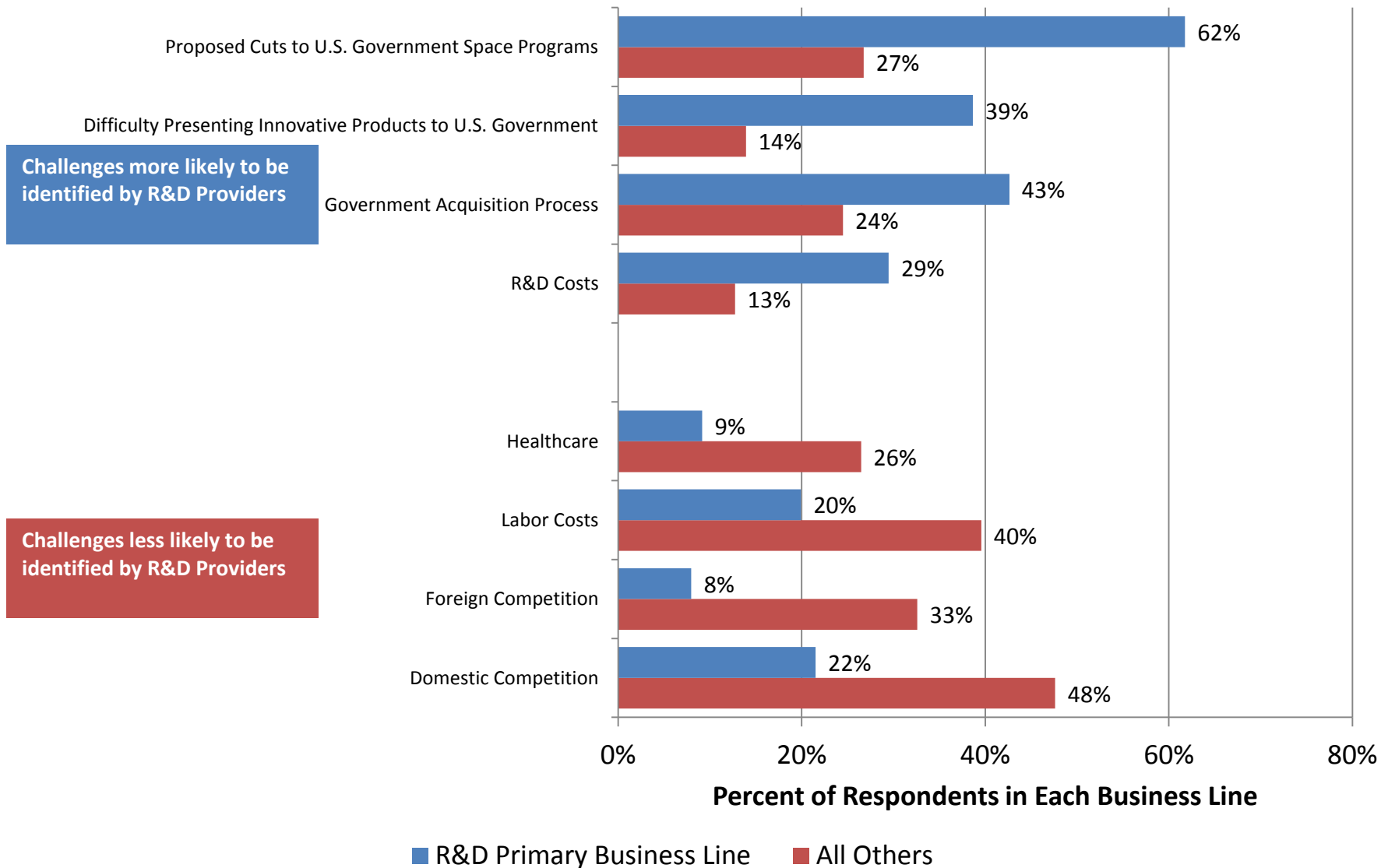
## Differences in Challenges Foreseen by Respondents, Based on Revenue Growth from 2009-2012



## Differences in Respondents' Primary Business Line Based on Revenue Growth from 2009-2012



## Differences in Challenges Foreseen by R&D Providers Relative to All Other Respondents

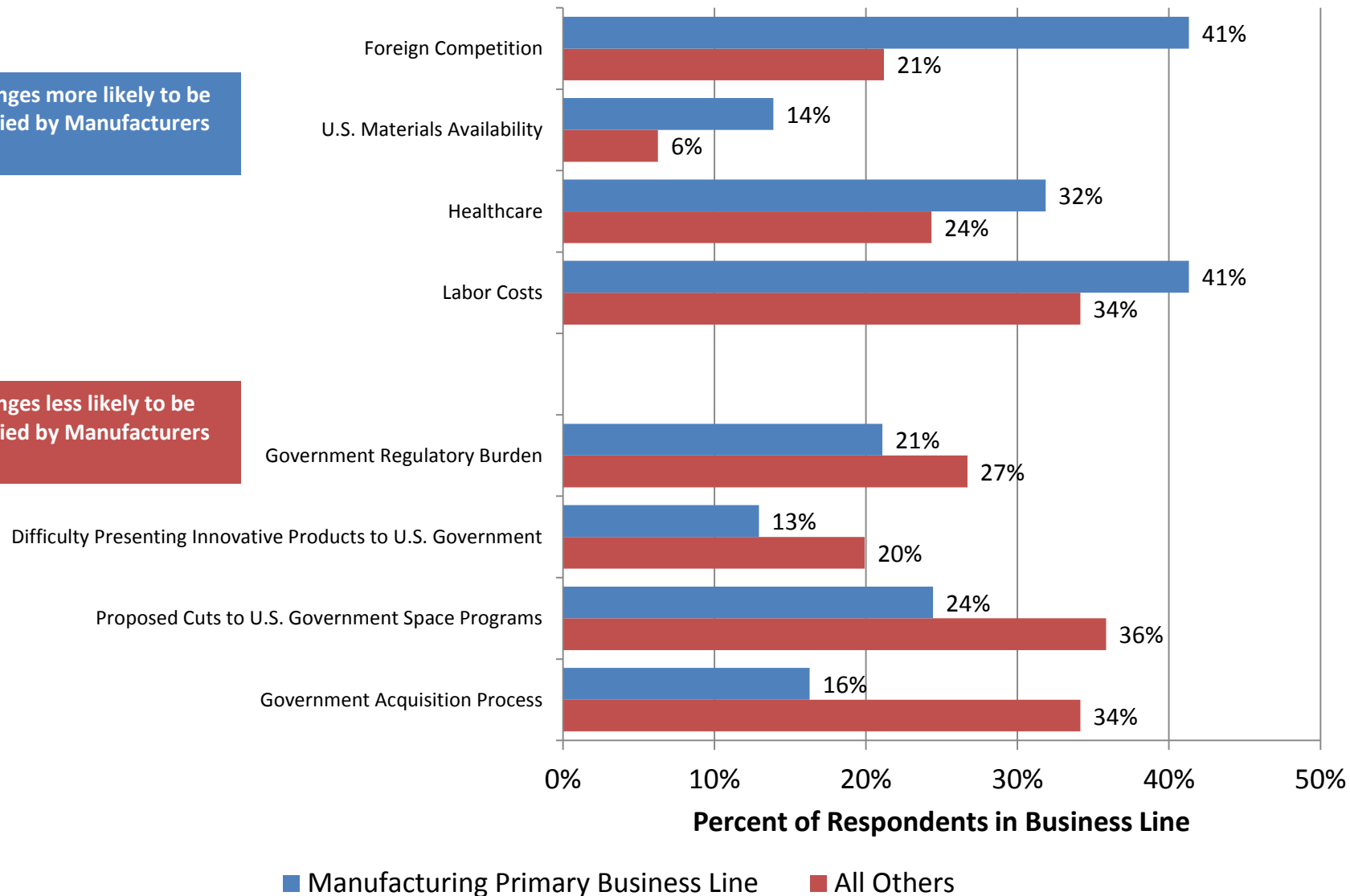




## Differences in Challenges Foreseen by Manufacturers Relative to All Other Respondents

Challenges more likely to be  
identified by Manufacturers

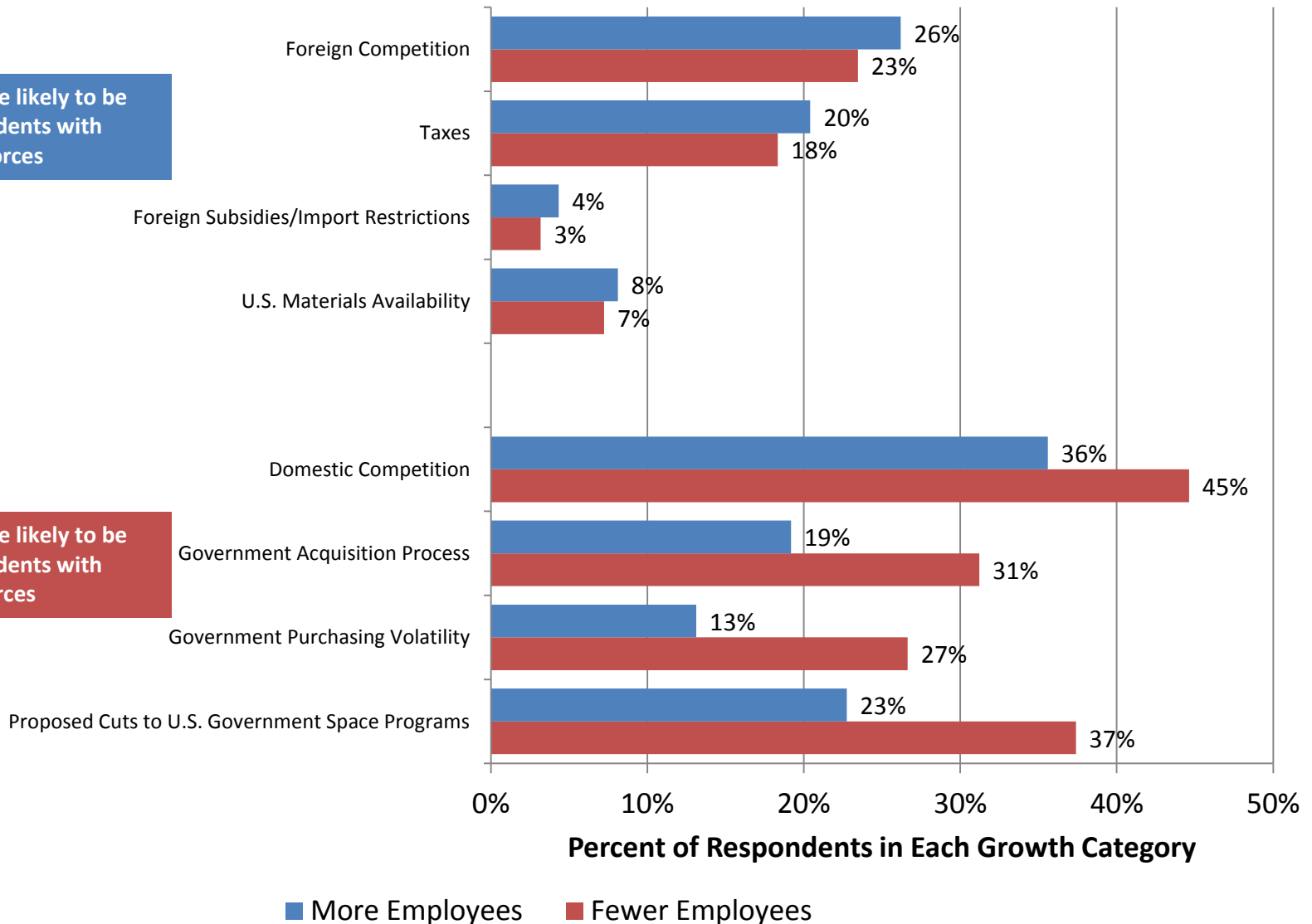
Challenges less likely to be  
identified by Manufacturers



## Differences in Challenges Foreseen Based on Respondents' Growth in Employment

Challenges more likely to be  
seen by respondents with  
growing workforces

Challenges more likely to be  
seen by respondents with  
smaller workforces



## Differences in Challenges Foreseen Based on Number of Employees in 2012

Challenges more likely to be  
seen by respondents with a  
large number of employees

Government Regulatory Environment

Skills Retention

Export Controls

R&D Costs

Healthcare

Barriers to Entry in the Commercial Space Market

Challenges more likely to be  
seen by respondents with few  
employees

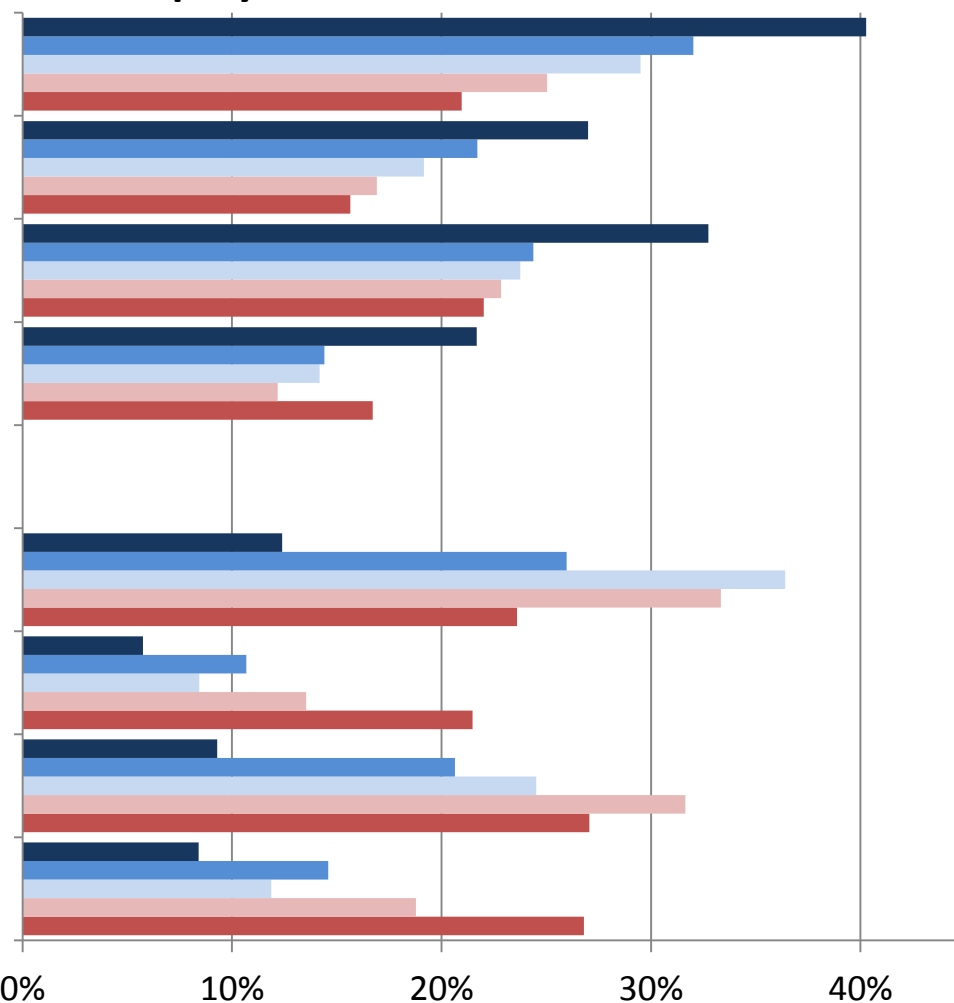
Taxes

Difficulty Presenting Innovative Products to U.S. Government

0% 10% 20% 30% 40%

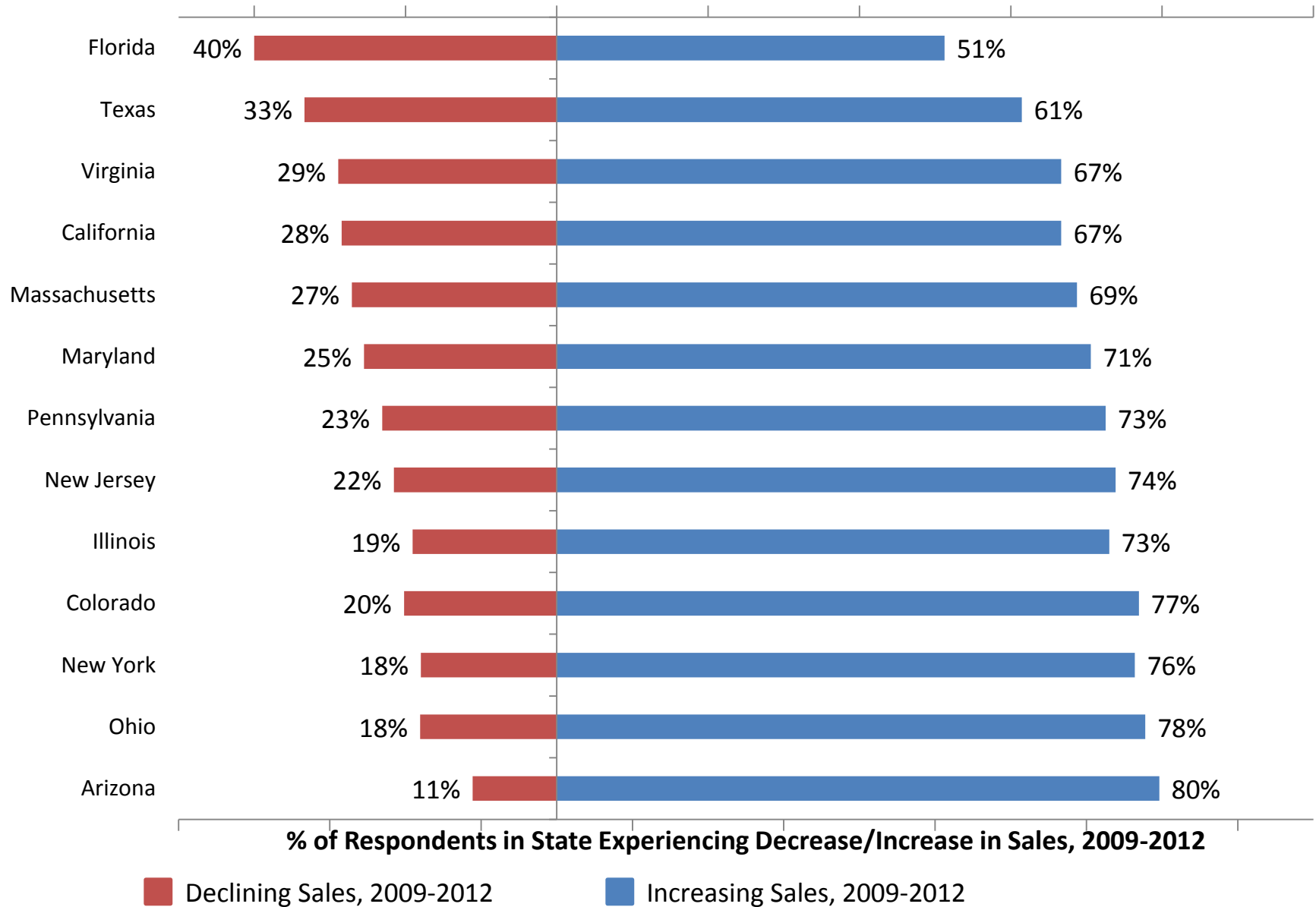
Percent of Respondents in Each Employment Category

Over 1,000 employees 100-1,000 employees 50-100 employees 10-50 employees Under 10 employees



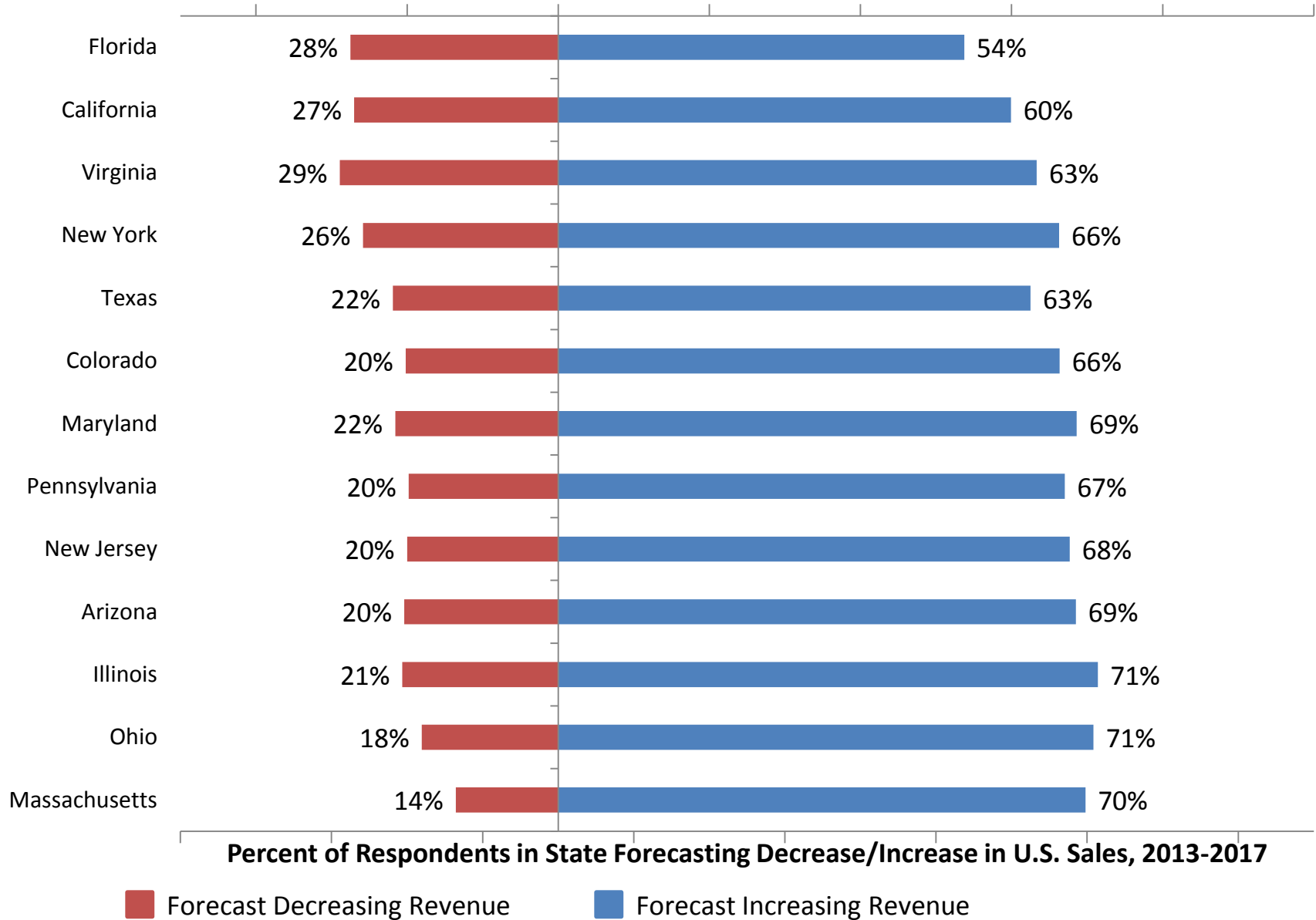
# Past Trend of U.S. Sales by Respondent's State, 2009-2012

Based on States with Over 50 Respondents



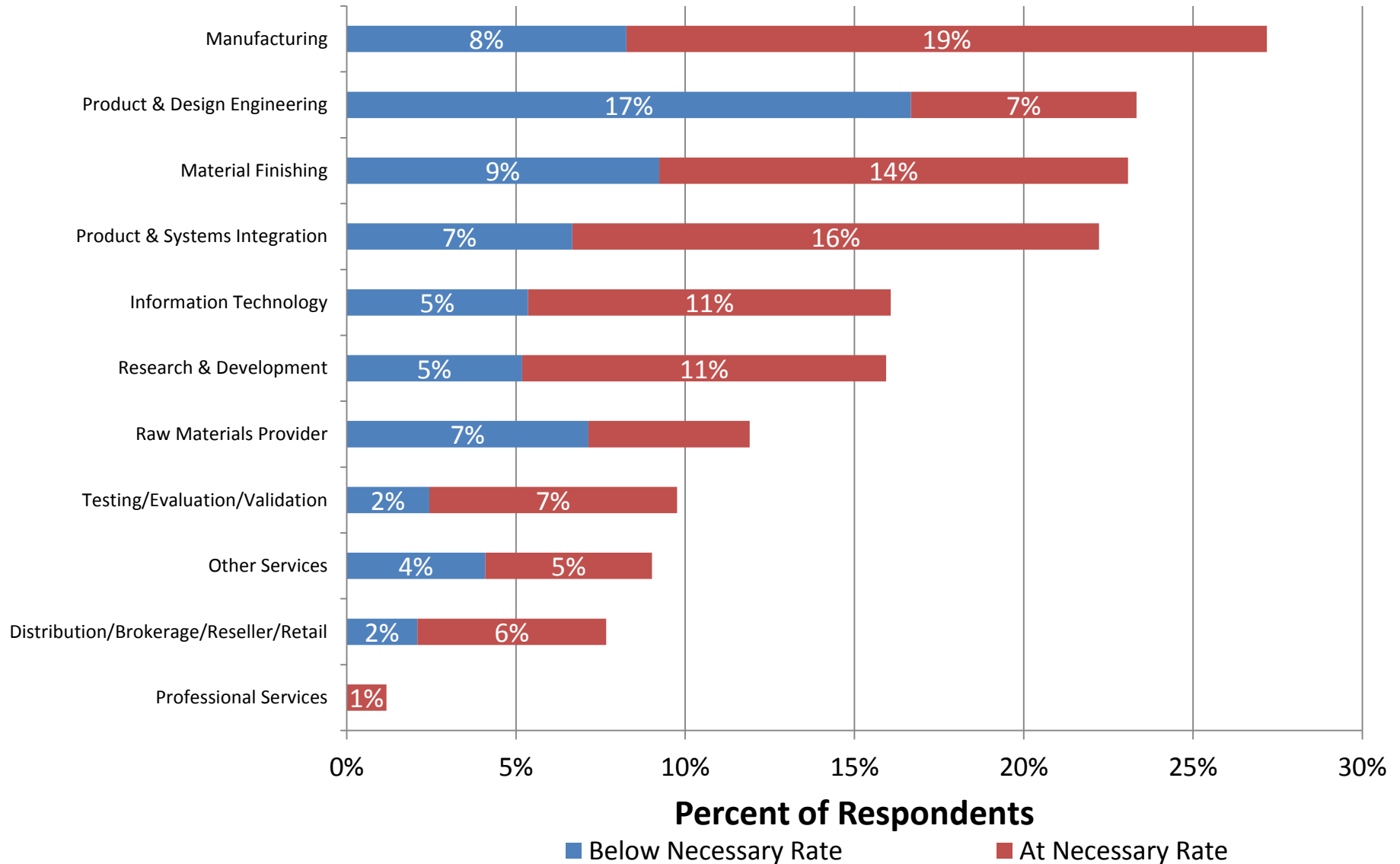
# Expected Trend of U.S. Sales by Respondent's State

Based on States with Over 50 Respondents



# Respondents Operating At or Below Their Minimum Capacity

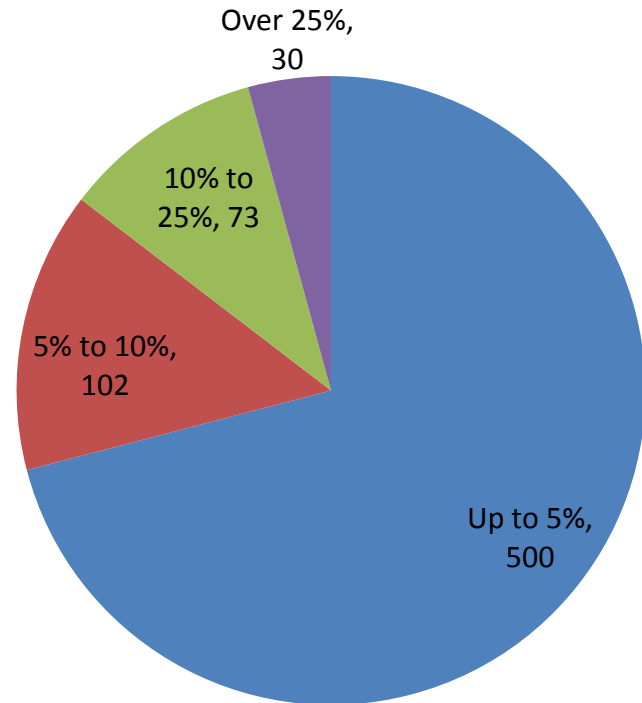
## Utilization Rate by Primary Business Line



# Challenges to Hiring

- Over one-third of respondents had open vacancies, and 10% had vacancies accounting for over five percent of their total workforce.
- An overwhelming portion of respondents' comments on problems in filling open vacancies were related to the difficulty finding candidates with the specific skills or experience they were seeking.
- A significant portion also had trouble drawing applicants to their location for a number of reasons:
  - Remote locations that are undesirable to live in;
  - Locations with high costs of living;
  - Applicants are unable to relocate because they can not sell their houses
- Other notable challenges included:
  - Too much demand/competition for too few applicants
  - Not enough business to require adding employees
  - Difficulty in getting security clearances in an appropriate amount of time
  - Trouble hiring foreign citizens

## Vacancies as a % of Total Number of Employees



# Challenges to Hiring

## Theme: Lack of Specific Skills/Experience

- “[Our company] relies on highly experienced staff in both its manufacturing and engineering functions. [Our location] has experienced a declining industrial base and a reduction in local space and aerospace related business. People are choosing not to enter these markets due to uncertainty of future demand.” – Large company
- “Responsible motivated people are more interested in a college degree than becoming a production line worker.” – Small company
- “Schools/society tells kids that manufacturing is a dead end job, therefore there is a real shortage of younger people entering the skilled trades fields.” – Medium company
- “Very difficult to find/hire US citizen engineers with advanced degrees. Extremely difficult to find any production workers with proper training or education in technical skills/trades.” – Small company
- “Qualified engineers have been difficult to find. Many applicants are foreign nationals and since we have both space and defense contracts, we require personnel who can obtain U.S. Security clearance and foreign nationals do not qualify for that.” – Very small company
- “The primary difficulty is finding people trained in engineering, particularly with materials backgrounds. Materials engineers are relatively hard to find already, and materials technicians are pretty much non-existent. Therefore hiring is usually of people with technical/STEM degrees, but significant on-the-job training is required” – Small company



# Challenges to Hiring

## Theme: Locational Difficulties

- “Most candidates in this market have multiple job opportunities to select from. ... A number of the candidates don't want to relocate to this part of the country.” – Small company
- “People unable to sell their houses to move, Skill sets are no longer taught (Dying profession).” – Small company
- “We have been trying to fill a skilled manufacturing technician position to no avail. It appears that qualified candidates are unable to relocate due to their inability to sell their current homes.” – Very small
- “Engineering positions - have some difficulty filling due to remote location and pay disparity.” – Very small company
- “Geographic locations of manufacturing facilities limit the talent pool. Qualifications of candidates in these remote locations are not to standard for technical requirements.” – Large company

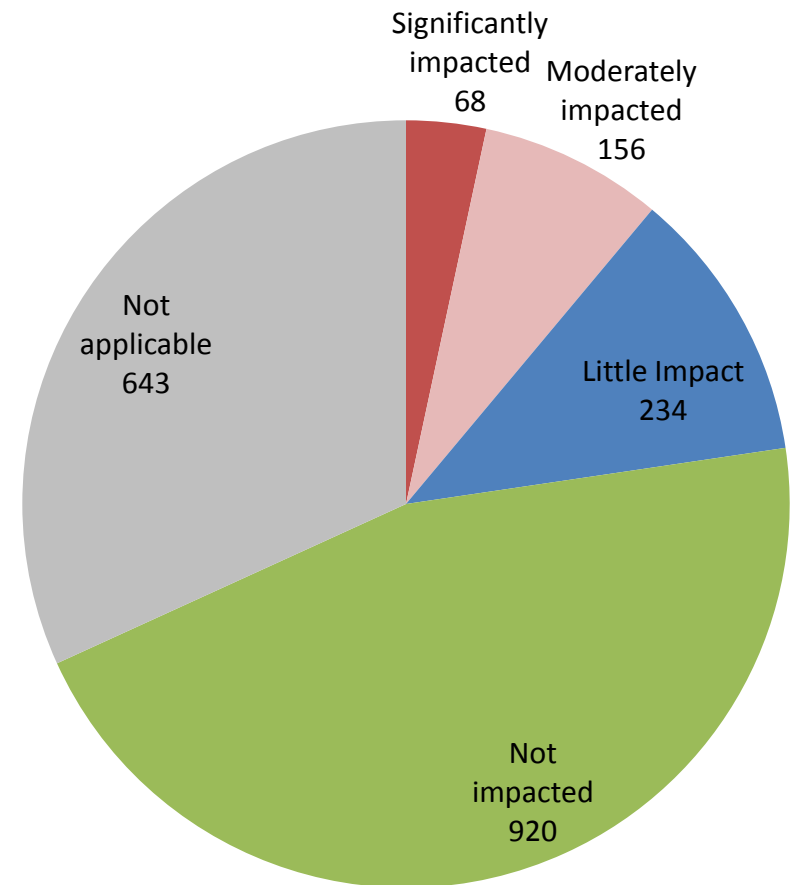
# Challenges to Hiring

## Other Themes

- “6 unfilled vacancies for engineers. We are recruiting aircraft Stress Engineers with experience and they are very difficult to find due to high global market demand. The US needs to issue more H1B visas and on a quarterly basis rather than annual basis.” – Very small company
- “Due to the skill set required for our employees, there have been times it has been difficult to find them. Therefore, we have had to hire individuals that are not US citizens and require sponsorship. ” – Medium company
- “Positions requiring security clearances take longer to fill” – Very large company
- “We typically hire engineering PhDs. Most are foreign born as there are very few U.S. born PhD candidates in university engineering programs. These programs typically grant degrees to Chinese and Indian Nationals. We apply for H1B visas for the new hires and sponsor them for green cards. Most later apply for U.S. citizenship.” – Medium company
- “Maintaining proper staffing levels is difficult due to changes and cutbacks in Government space program funding and procurement. We generally hesitate to staff up to the level we think we may need because we do not want to hire, only to find that we will have to lay personnel off soon afterward.” – Small company
- “No serious difficulties. Many of our engineers are hired through our college intern program. We also work with school ... to find and train machinists to fill our production vacancies.” – Medium company

# Expected Impacts of Reductions in U.S. Government Space-Related Spending on Respondent's Capital Expenditures

- 458 respondents (roughly one-quarter) indicated their capital expenditures would be affected in some manner by reductions in space-related U.S. Government spending.
- Most respondents indicated that their capital expenditures would follow the general trend of their business, so those who would see their sales impacted expected to adjust capital expenditures.
  - “Investment in Space segment is tied to Profit and Loss of the Space business, with US Government as the major end customer for all US Space industry, reduced spending will definitely affect our return of investment.” – Very Large Company
- Some respondents indicated they would attempt to shift away from supporting the space industry if faced with reduced government expenditures.
  - “If space-related spending is further reduced, will move company thrust to DoD/IT/Health Care and adjust capital expenditures to new markets as well as we can.” – Large Company



# Summary of Selected Findings

- While most respondents are optimistic about U.S. sales in the next five years, this is not true for space sales, where just 30% of respondents expect increasing sales.
- Respondents with shrinking revenues between 2009 and 2012 were more likely to express concern about their interactions with the government, while those with strong revenue growth saw competition and general business costs such as taxes and healthcare as their biggest challenges.
- Respondents with larger numbers of employees tended to be more concerned about skills retention, government regulations (including export controls), and R&D costs, while smaller respondents were most concerned about taxes, barriers to entry, and healthcare.
  - Healthcare was most of a concern for respondents with between 50 and 100 employees, followed by those with between 10 and 50 employees. The largest respondents were relatively unconcerned about healthcare.
- A significant number of respondents were hiring: 35% had open vacancies.
  - Of those having trouble hiring, the vast majority cited trouble finding candidates with the proper skills and experience, especially in STEM-related and skilled manufacturing positions.
  - Many respondents also cited their location played a factor in hiring troubles, either due to remote/undesirable production locations or the cost of living making recruiting difficult.